U.S. Department
of Transportation
Pipeline and
Hazardous Materials
Safety Administration

400 Seventh Street, S.W.
Washington, D.C. 20590

**COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE B(U)
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/0714/B(U)-96, REVISION 0**

REVALIDATION OF CANDADIAN COMPETENT AUTHORITY CERTIFICATE CDN/2084/B(U)-96

This certifies that the radioactive materials package design described below is hereby approved for use within the United Sates for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency[1] and United States of America[2].

1. Package Identification - MDS Nordion F-423 overpack containing the MDS Nordion Inc. Gammacell 220 irradiator.

2. Packaging Description - as described in Canadian Certificate of Competent Authority CDN/2084/B(U)-96, Revision 0 (attached).

3. Authorized Contents - The F-423/GC220 package is authorized to contain a maximum of 963 TBq (26,000 Ci) of Co-60 in a maximum of 48 sealed sources having a maximum of 185 TBq (5,000 Ci) per source.

   The source models authorized are:

   a) any sealed source which meets the requirements of special form radioactive material, or

   b) the MDS Nordion C-166, C-167 or C-185, or the J. L. Shepherd source model 7810-220. These sources must have been leak tested within six months prior to shipment, and must not have been damaged during their service life.

4. General Conditions -

   a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation in accordance with the endorsed certificate.

   b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology (PHH-23), Pipeline and Hazardous Materials Administration, U.S. Department of Transportation, Washington, D.C. 20590-0001.

   c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

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1 "Regulations for the Safe Transport of Radioactive Materials, 1996 Edition (Revised), No. TS-R-1 (ST-1 Revised)," published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

2 Title 49, Code of Federal Regulations, Parts 100 - 199, United States of America.

d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations[1] shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors and consignees in the United States exporting or importing shipments under this certificate shall satisfy the requirements of Subpart H of 10 CFR 71.

5. Marking and Labeling - The package shall bear the marking USA/0714/B(U)-96 in addition to other required markings and labeling.

6. Expiration Date - This certificate expires on June 30, 2010.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the petition and information dated July 12, 2005 submitted by MDS Nordion, Kanata, Canada and in consideration of other information on file in this Office.

Certified by:

JUL 22 2005

Robert A. McGuire (DATE)
Associate Administrator for Hazardous Materials Safety

Revision 0 - issued to revalidate Canadian Certificate of Competent Authority No. CDN/2084/B(U)-96, Revision 0, with additional restrictions on certain authorized sources.

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2084/B(U)-96 (Rev.0)	**Jul-11-2005**	**Jun-30-2010**	**30-10-2-182**

Certificate
for
Transport Package Design

The transport package design identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and Section 7 of the *Packaging and Transport of Nuclear Substances Regulations*, and to the 1996 Edition (Revised) of the IAEA *Regulations for the Safe Transport of Radiactive Material*.

REGISTRATION OF USE OF PACKAGES

All users of this authorization shall register their identity in writing with the Canadian Nuclear Safety Commission prior to the first use of this authorization and shall certify that they possess the instructions necessary for preparation of the package for shipment.

PACKAGE IDENTIFICATION

Designer : **MDS Nordion**
Make/Model : **F-423 Transport Package**
Mode of Transport : **Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark **"CDN/2084/B(U) - 96"**.

PACKAGE DESCRIPTION

The F-423/GC220 consists of a stainless steel overpack construction filled with 203 mm thick polyurethane foam on the sides and 306 mm thick polyurethane foam on the ends and 102 mm of polyurethane foam in the bottom. The overpack is closed by a lid which consists of a 12.7 mm thick stainless steel top, a 6.4 mm thick steel sheet on the bottom and a 102 mm thick polyurethane foam in between. The lid is closed by forty 25.4 mm diameter bolts and includes a neoprene gasket.

The F-423 cavity contains a Gammacell 220 irradiator which is further retained in a stainless steel inner frame filled with polyurethane foam and a polyurethane foam bonnet and lower crush pad. The shielding is provided by the GC220 shielding head, which consist of a minimum 254 mm of lead, encased in a steel shell. The shielding material may also contain depleted uranium or tungsten.

Illustrations of the package are shown on attached MDS Nordion Drawing No. F-423 (Issue 3), Sheets 1 to 3.

Canada

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2084/B(U)-96 (Rev.0)	**Jul-11-2005**	**Jun-30-2010**	**30-10-2-182**

The various configurations of the package are as follows:

Shape: **Rectangular**
Mass: **9530 kg**
Length: **2197 mm**
Width: **1677 mm**

Shielding: **Lead**
Outer Casing: **Stainless Steel**
Height: **2042 mm**
Diameter: **n/a**

AUTHORIZED RADIOACTIVE CONTENTS

The F-423/GC220 package is authorized to contain a maximum of 963 TBq of Co-60 in a maximum of 48 sealed sources having a maximum of 185 TBq per source.

The source models authorized are:

a)the MDS Nordion C-198 which meets the requirements for special form radioactive material;

b)the MDS Nordion C-166, C-167 and C-185 or the J.L. Shepherd source model 7810-220, or

c)any sealed sources which meet the requirements of special form radioactive material.

QUALITY ASSURANCE

Quality assurance for the design, manufacture, testing, documentation, use, maintenance and inspection of the package shall be in accordance with:

- MDS Nordion Procedure No. IN/DS 2190 F423(3) "Design, Manufacturing and Operating Specifications for the F-423 Package"
- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

SHIPMENT

The preparation for shipment of the package shall be in accordance with :

- MDS Nordion Procedure No. IN/DS 2190 F423 (3) "Design, Manufacturing and Operating

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2084/B(U)-96 (Rev.0)	**Jul-11-2005**	**Jun-30-2010**	**30-10-2-182**

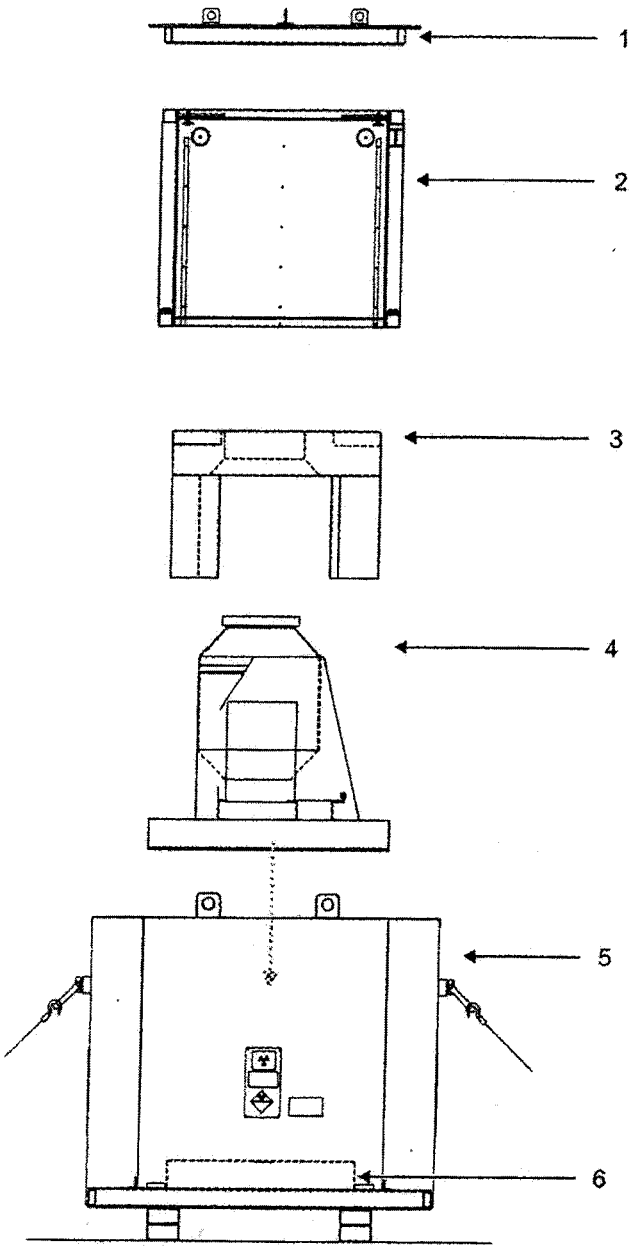
Specifications for the F-423 Package"

- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

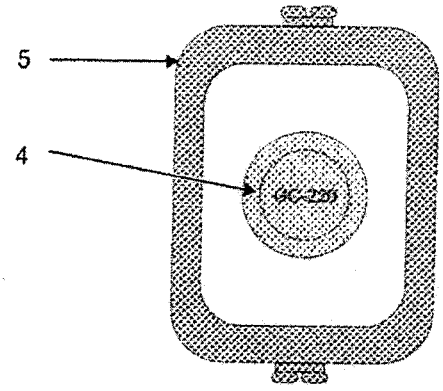
This certificate does not relieve the shipper from any requirement of the government of any country through or into which the package will be transported.

P. Nelson
Designated Officer pursuant to paragraph 37(2)(a)
of the Nuclear Safety and Control Act

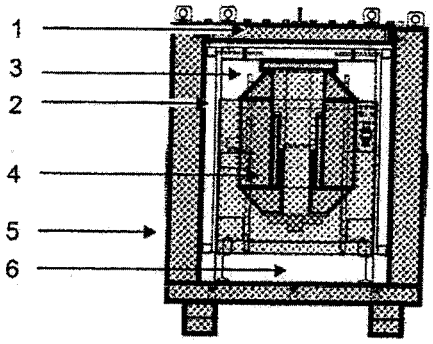
Canada



ASSEMBLY SEQUENCE



Plan View



Sectional View

Notes

1. Meets IAEA Type B(U)-96 Requirements
2. Gross weight: 9,350 kg (20,600 lb.)
3. Floor loading (based on projected floor area):2,540 kg/m² (520 lb./ft.²)
4. Maximum Radioactive Contents: 963 TBq (26,000 Ci) of Co-60
5. Preparation for shipment as per IN/PP 1554 F423/GC220

Parts List

1. Lid (see sheet 2)
2. Inner frame (see sheet 3)
3. Bonnet (see sheet 3)
4. Gammacell 220 (prepared for shipment) (see sheet 3)
5. F-423 Overpack (see sheet 2)
6. Lower Crush Pad (see sheet 2)

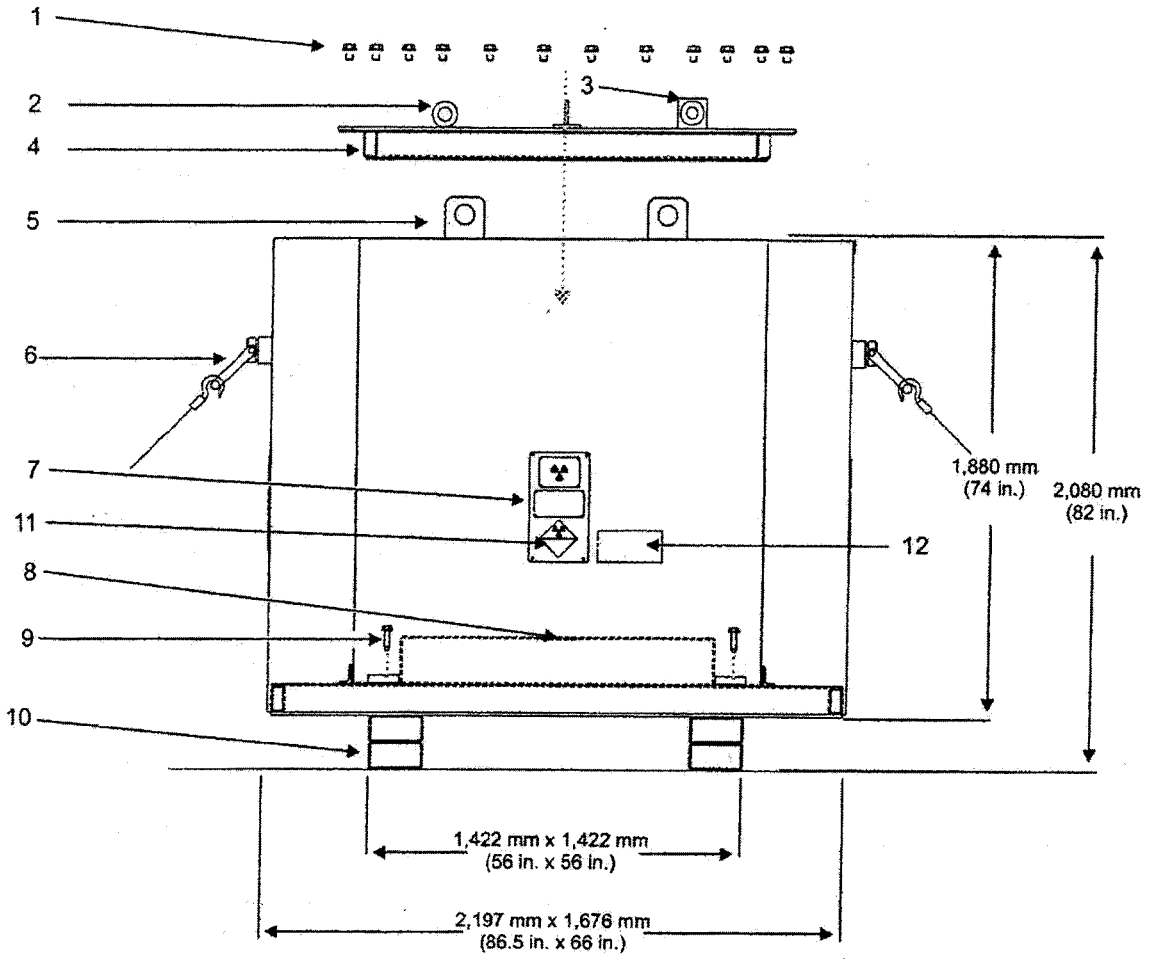
MDS Nordion
447 March Road, P.O. Box 13500
Kanata, Ontario, Canada, K2K 1X8
Tel: (613) 592-2790 · Fax. (613) 592-6937

TITLE

F-423 Transport Package

REF. IN/SS 1574 F423			REVISED Jul 05	DC 19781
DATE May 2000			No. F-423	ISSUE 3
DRAWN BW	CHECKED JR	APPROVED MK	SHEET 1 OF 3	

F-423 OUTER ASSEMBLY



Parts List

1. Screws (40 1.00-8 UNC x 2.5 LG alloy steel)
2. Lift Lug Guard (1 shown) (4)
3. Lift Lug (1 shown) (4)
4. Lid
5. Lift Lugs (4)
6. Tie-Down Rings (4)
7. Radiation warning and Identification plates (displayed on all 4 sides)
8. Lower Crush Pad
9. Screw (8 hex socket head, 0.63 -11 UNC-3A, 1.5 in long)
10. Foot Pad
11. Radioactive Category Labels (4)
12. UN Number Labels (4): one next to each of the radioacitve category labels

Notes

1. Lid Weight 475 kg (1,050 lb.)
2. Overpack Weight 3,970 kg (8,750 lb)
3. Lower Crush Pad Weight 160 kg (355 lb.)
4. Lid 1,715mm x 1,400 mm (67.5 in. x 55.0 in.)
   Opening 1,550 mm x 1,232 mm (61 in. x 48.5 in.)

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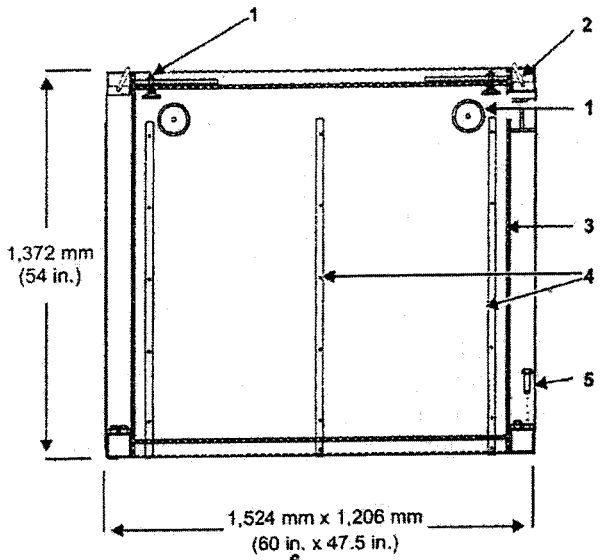
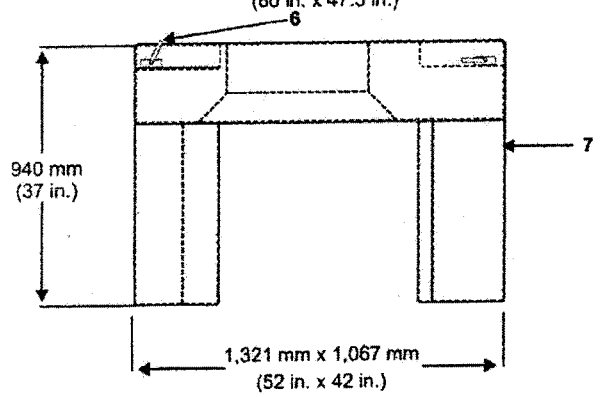
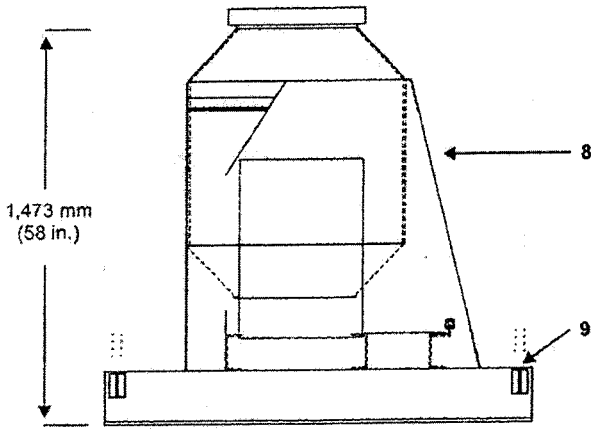
DATE May 2000		No. F-423	ISSUE 3
DRAWN BW	CHECKED JR	APPROVED MK	SHEET 2 OF 3

F-423 INNER ASSEMBLY







Parts List

1. Clamping Pad (12)
2. Inner Assembly Hoist Ring (max. 5,000 lb.) 4x
3. Inner Frame
4. Rub Bars (10)
5. 0.62-11 UNC x 5.25 LG Cap Screw
   (8x used to fasten inner frame to GC-220)
6. Bonnet Hoist Ring (max. 5,000 lb.) 4x
7. Bonnet
8. GC-220 Prepared for Shipment
9. Threaded holes for screws (see 5)

Notes

1. Inner Frame Weight 470 kg (1,038 lb.)
2. Bonnet Weight 384 kg (846 lb.)
3. For a detailed depiction of the GC-220,see specification IN/SS 1576 GC220

MDS Nordion

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DRAWN BW	CHECKED JR	APPROVED MK	SHEET 3 OF 3